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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,663	05/18/2001	Shinichiro Kawano	MATS:027	3648

7590 02/06/2003

Rossi & Associates
PO Box 826
Ashburn, VA 20146-0826

EXAMINER
JONES, JUDSON

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 02/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/719,663	Applicant(s) KAWANO ET AL.	
	Examiner Judson H Jones	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,19-24 and 26-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26 and 27* is/are allowed.

6)☒ Claim(s) *1-17,19-24 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on 12/23/02 is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Applicant's arguments with respect to claims 1-17, 19-24 and 28 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Denne 5,440,183. Denne discloses in figure 21 a tubular inner yoke, a tubular outer yoke, a coil and a permanent magnet located between the inner and outer yokes with the magnet supported by a steel core such as described in column 10 lines 7-9 and further connected to thrust rods 210 as shown in figure 21. The vibrator here is considered to be the steel core numbered as element 128 in figure 12a and as shown in figure 21 but not numbered there.

In regard to claim 2, see Denne figure 12a.

In regard to claim 5, see Denne column 10 lines 1-4. While Denne does not provide details on the type of steel being used, most steels inherently have a permeability of more than ten times that of vacuum.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 3, 12, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denne in view of Pouillange 4,757,220 and Park et al. 6,097,125. Denne discloses a linear motor comprising a tubular outer yoke, a tubular inner yoke, a coil and a permanent magnet located

between the outer yoke and the inner yoke but does not disclose slits in the magnet support means between adjacent magnets. In column 7 lines 25-37 Denne suggests a slot at right angles to the path in which an eddy current would otherwise flow. Pouillange teaches that eddy currents can flow between magnets and yokes in column 4 lines 47-50. Pouillange teaches placing insulation between two adjacent magnets and between a magnet and a yoke. Since Pouillange and Denne are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have placed gaps between adjacent magnets as shown for example in Denne figure 23 and to have placed insulation in the form of a solid insulating material or to have left an air gap between adjacent magnets in order to reduce eddy current losses and to thus make the motor more efficient. Park et al. teaches that eddy currents flow in the magnet holding member 620 as described in column 5 lines 30-32 and teaches making slits in the magnet holding member. Since Park et al. and Denne as modified by Pouillange are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized slits in the magnet holding member between adjacent magnets in order to reduce eddy current losses and thus make the motor more efficient.

In regard to claim 13, see Park et al. figure 8.

In regard to claim 16, see Denne figures 12a and 21.

Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Denne in view of Yamamuro 3,922,501 and Radovsky 6,191,517 B1. Denne discloses the linear motor but does not disclose a specific electrical resistance. Yamamuro teaches in figure 7 and in column 3 lines 17-24 increasing the resistance of a magnetic pole by using laminations in order to reduce eddy

currents. Since Yamamuro and Denne are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized laminations in a linear motor in order to achieve an electrical resistance of the stated level for the purpose of reducing eddy current losses and thus increasing the efficiency of the machine. Radovsky teaches another methods of reducing eddy currents in column 2 lines 52-65, the method of using an electrically resistive material such as a ferrite. Since Radovsky and Denne as modified by Yamamuro are both from the same field of endeavor, it also would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a high electrical resistance material for a pole piece when a motor with a low distortion level was needed. Combining the two methods would produce an extremely low electrical resistance level.

Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denne as applied to claim 1 above and further in view of Watanabe et al. 6,222,286 (of record). Denne discloses the vibrator but does not disclose the vibrator being made of a material comprising iron and chrome. In column 10 lines 1-5 Denne mentions steel but provides no suggestion as to what type of steel is preferable. Watanabe teaches in column 1 line 61 to column 2 line 18 that chrome steel with some added aluminum is a good material for machinability and corrosion resistance. Since Watanabe et al. and Denne are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized chrome steel in a linear motor in order to reduce eddy currents, resist corrosion and to make the parts easily machinable, thus increasing the efficiency, increasing the usable life and reducing the cost of the motor.

In regard to claim 10, see Watanabe et al. column 2 line 12.

In regard to claim 11, see Watanabe et al. column 2 line 14.

Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Denne as applied to claim 1 above, and further in view of Pouillange 4,757,220. Denne discloses the linear motor but does not disclose an electrically insulating layer on a surface of a vibrator. Pouillange teaches in column 4 lines 48-50 that a magnet and a yoke need to be electrically insulated from each other if they are made of conductive material. This means that either the yoke or the magnet needs an electrically insulating layer. Since Pouillange and Denne are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized an electrically insulating layer on the surface of a compression formed yoke in order to reduce eddy current losses and thus increase the efficiency of the machine.

Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denne and Japanese reference 10-323003 (cited by Applicant). Denne discloses the linear motor but does not disclose using such a motor for a compressor. The Japanese reference teaches using a moving magnet voice coil motor for a compressor in figure 12. Since the Japanese reference and Denne are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a moving magnet voice coil motor for a compressor in order to extend the usefulness and marketability of the motor.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denne in view of Katcher et al. 6,177,748 B1. Denne discloses a linear motor but does not disclose one of the inner or outer yokes made from compressed metallic magnetic particles. Katcher et al.

teaches making a yoke from compressed particles in column 2 lines 31 ½ -40 ½. Since Katcher et al. and Denne are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a motor core (i.e., a motor yoke) made from magnetic particles in order to reduce the cost of the motor by reducing wastage of core material while keeping the magnetic permeability of the core high.

In regard to claim 20, see Katcher et al. column 2 lines 38 ½ to 40 ½. While Katcher et al. does not describe his resin as electrically insulating, the phrase "generate minimal eddy current losses" indicates that the resin is electrically insulating.

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denne and Katcher et al. as applied to claim 19 above, and further in view of Pouillange 4,757,220. Denne as modified by Katcher et al. discloses the linear motor but does not disclose an electrically insulating layer on a surface of a compression formed body. Pouillange teaches in column 4 lines 48-50 that a magnet and a yoke need to be electrically insulated from each other if they are made of conductive material. This means that either the yoke or the magnet needs an electrically insulating layer. Since Pouillange and Denne as modified by Katcher et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized an electrically insulating layer on the surface of a compression formed yoke in order to reduce eddy current losses and thus increase the efficiency of the machine.

In regard to claim 22, see Katcher et al. column 2 lines 38 ½ to 40 ½ where Katcher et al. discloses resin as an electrically insulating substance. Resin is an inorganic material. Furthermore both inorganic and organic insulating materials are well known in the art.

Claims 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grodinsky et al. 5,357,587 in view of Katcher et al. Grodinsky et al. discloses a linear motor having a mover vibrating along a yoke section where the yoke section is divided along a circumferential direction as shown in figure 3 and as described in column 4 lines 3-9 but does not disclose the yoke made from metallic magnetic particles. Katcher et al. teaches in column 2 lines 31 ½ to 40 ½ that making a yoke from magnetic particles combined with a resin bonding agent can reduce eddy currents. Since Katcher et al. and Grodinsky et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a yoke made from compressed particles in the motor of Grodinsky in order to further reduce eddy current losses and to thus increase the efficiency of the motor.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grodinsky as modified by Katcher et al. as applied to claim 23 above, and further in view of Pouillage. Grodinsky as modified by Katcher et al. discloses the linear motor but does not disclose an electrically insulating layer on a surface of a compression formed body. Pouillange teaches in column 4 lines 48-50 that a magnet and a yoke need to be electrically insulated from each other if they are made of conductive material. This means that either the yoke or the magnet needs an electrically insulating layer. Since Pouillange and Grodinsky et al. as modified by Katcher et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized an electrically insulating layer on the surface of a compression formed yoke in order to reduce eddy current losses and thus increase the efficiency of the machine.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grodinsky et al. in view of Katcher et al. and Pouillange. Grodinsky et al. discloses a linear motor having a yoke section with a mover vibrating along the yoke section but does not disclose the yoke section being compression formed and molded of metallic magnetic particles and does not disclose an insulating layer on the surface of the yoke. Katcher et al. teaches in column 2 lines 31 ½ to 40 ½ that making a yoke from magnetic particles combined with a resin bonding agent can reduce eddy currents. Since Katcher et al. and Grodinsky et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a yoke made from compressed particles in the motor of Grodinsky in order to further reduce eddy current losses and to thus increase the efficiency of the motor. Grodinsky et al. as modified by Katcher et al. discloses the linear motor but does not disclose an electrically insulating layer on a surface of a compression formed body. Pouillange teaches in column 4 lines 48-50 that a magnet and a yoke need to be electrically insulated from each other if they are made of conductive material. This means that either the yoke or the magnet needs an electrically insulating layer. Since Pouillange and Grodinsky et al. as modified by Katcher et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized an electrically insulating layer on the surface of a compression formed yoke in order to reduce eddy current losses and thus increase the efficiency of the machine.

Allowable Subject Matter

Claims 26 and 27 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose or teach making an inner or an outer yoke by arranging a plurality of multi-layered blocks with a spacing between adjacent blocks filled with a compression formed body as recited in claims 26 and 27.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JHJ
February 5, 2003

Judson Jones

Art Unit 2834